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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/751,258	12/31/2003	Michael K. Eschmann	ITL.1082US (P18346)	7473
21906	7590	11/01/2007		
TROP PRUNER & HU, PC 1616 S. VOSS ROAD, SUITE 750 HOUSTON, TX 77057-2631			EXAMINER BATAILLE, PIERRE MICHE	
			ART UNIT 2186	PAPER NUMBER
			MAIL DATE 11/01/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/751,258	Applicant(s) ESCHMANN ET AL.	
	Examiner Pierre-Michel Bataille	Art Unit 2186	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 October 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) 6 and 10 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7-9 and 11-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The present Office Action is taken in response to applicant's communication filed October 06, 2007 responding to Final rejection dated August 27, 2007. Applicant's amendment and/or arguments have been considered with the results that follow.
2. Claims 1-4, 6-9 and 11-30 are now pending in the application under prosecution, as claims 5 and 10 have been canceled by applicant's amendment.

Response to Arguments

3. Applicant's arguments with respect to claims 1-4, 6-9 and 10-30 have been considered but are moot in view of the new ground(s) of rejection.

The previous Office Action was made Final by the examiner, which was premature as the action followed a request for RCE. The Action should have been made non-Final. The current Office Action is however, made final as necessitated by applicant's amendment.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 1-5, 7-9 and 11-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,304,946 (Mason, Jr.) in view of US 7,139,864 (Bennett et al)

With respect to claim 1, 11 and 21, Mason, Jr. teaches a system and/or method comprising the means by which multiple potentially non-sequentially cached logical disk block write requests may be subsequently coalesced into a single logical disk write request to improve the effective efficiency of a disk storage system, by way of teaching that groups of arbitrarily previously cached block writes may be identified as a candidate for inclusion within an aggregate coalesced write operation by forming and traversing a logical hierarchy of such cached blocks in a manor corresponding to their natural logical sequential ordering (see abstract and figure 4); however as it may be argued that Mason, Jr. does not explicitly teach that such previously non-sequentially cached writes may be written back as a single "larger" write operation not otherwise inherently composed of potentially multiple disk writes. However, Bennett discloses (see Fig. 8) illustration of an example of sectors in a logical group being written in sequential order to a sequential update block as a result of two separate host write operations that has a discontinuity in logical addresses wherein: (1) in host write #1, the update data in the

logical sectors LS5 LS8 is recorded in a dedicated update block as LS5' LS8'; (2) in host write #2, the update data in the logical sectors LS14 LS16 is being recorded in the update block following the last write as LS14' LS16'; and (3) there is an address jump between LS8 and LS14 and the host write #2 would normally render the update block non-sequential; and (4) since the address jump is not substantial, one option is to first perform a padding operation (#2A) by copying the data of the intervening sectors from the original block to the update block before executing host write #2 (see abstract; Fig. 8 & Fig. 9; Col. 12, Line 25 to Col 13, Line 27). Therefore it would have been obvious to one of ordinary skill in the art to coalesce non-sequential write, as taught by Bennett, because the result would have permitted that the sequential nature of the update block be preserved. Bennett discloses an update block can be managed to receive updated data in either sequential order or non-sequential (also known as chaotic) order allowing non-sequential sector data to be grouped in a logical group and updated in sequential order in one continuing operation (abstract; Fig. 8 & Fig. 9; Col. 12, Line 25 to Col 13, Line 27).

With respect to claims 2-5, 7-9, 12-20 and 22-30, being dependant on claim 1, 11, 21 or correspondingly dependent claim inclusively, the search structure taught Mason, Jr. as reviewed above is further considered to implicitly teach that blocks stored within a cache organized by sets and ways are inherently searched in multiple directions and correspondingly may inherently coalesce blocks being comprised within multiple cache lines into a single write operation, but does not teach explicitly that otherwise taught by Bennett et al., being that cached written disk blocks may be

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identified with a dirty bit page 4 column 2 paragraph 54), that multiple disk block cached lines may be flushed in the same operation (page 7 column 2 paragraph 74), and that the cache may be composed of non-volatile memory (page 1 column 1 paragraph 3). Thereby it is considered obvious to combine that taught by Mason Jr., with that taught by Bennett et al. relevant to the claims, for the benefit of improving the write-back efficiently of a disk cache.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 2005/0141312 (Sinclair et al) teaching non-volatile memory and method with non-sequential update block management.

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

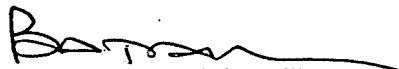
the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pierre-Michel Bataille whose telephone number is (571) 272-4178. The examiner can normally be reached on Mon, Tue-Fri (8:00A to 5:30P).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew M. Kim can be reached on (571) 272-4182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Pierre-Michel Bataille
Primary Examiner
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